

NEW ZEALAND MOLLUSCAN SYSTEMATICS WITH DESCRIPTIONS OF NEW SPECIES; PART 6

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ABSTRACT

In this part twelve species are added to the New Zealand Recent fauna, and of these, three are new species, and ten are representative of genera not previously known in this faunal area—they are *Casmaria*, *Dolabrifera*, *Fusinus*, *Liniaxis*, *Lyncina*, *Morula*, *Proxicharonia*, *Pteropurpura*, *Semele* and *Tutufa*. All of the new additions are of tropical or subtropical origin, an element that has been greatly strengthened within recent years, largely due to the increased activity of skin divers, working in the previously unexplored depths of the off shore rocky areas. Regarding origins, the influence of the East Australian Current satisfactory accounts for the genera *Dolabrifera*, *Fusinus* and *Liniaxis*. There is a recent survivor from a characteristic New Zealand Miocene genus in *Proxicharonia palmeri* n.sp. The remaining genera, however, point to a tropical South Pacific origin, except for the *Pteropurpura*, which comes from Japanese seas. The most unexpected addition is *Lyncina vitellus*, the second species of a true cowry to the found living in New Zealand waters. The first true cowry to be found here, *Erosaria cernica tomli* Schilder, 1930, was recorded in these records in 1965 (Powell, Rec. Auck. Inst. Mus., vol. 6, no. 2, pp. 164-165).

Family CYPRAEIDAE

Genus *Lyncina* Troschel, 1863.

Type: (s.d., Tryon, 1883) *Cypraea lynx* Linnaeus, 1758.

***Lyncina vitellus* (Linnaeus, 1758).** Plate 36, Figs. 1-3.

1758 Cypraea vitellus Linnaeus, Syst. Nat. ed. 10, p. 721.

A second species of a true cypraeid can now be added to the New Zealand Recent fauna on the basis of one live-taken and three well-preserved empty shells of this common Indo-Pacific shell, obtained by members of the Whangarei group of skin-divers.

The living example was found crawling on a rock face, at night, at 90 feet, in Shag Bay, west coast of Tawhiti Rahi, Poor Knights Islands, and the dead shells were taken in the same area, at 100 feet, by Mr W. Palmer, who has the live-taken and the 59 mm. specimen in his collection.

Length 59.0 mm.; width 40.0 mm.; height 32.5 mm. (largest Poor Knights spec.).

Length 54.5 mm.; width 36.0 mm.; height 31 mm. (living Poor Knights spec.).

The nearest occurrence of this shell to New Zealand is the Sydney Harbour *M. vitellus orcina* Iredale, 1931, which is a stumpy more pyriform race. Typical *vitellus* is common in Queensland waters and in the islands of the South West Pacific.

Family NATICIDAE

Genus *POLINICES* Montfort, 1810.

Type: (o.d.) *Polinices albus* Montfort, 1810 =
Nerita mammilla Linnaeus, 1758.

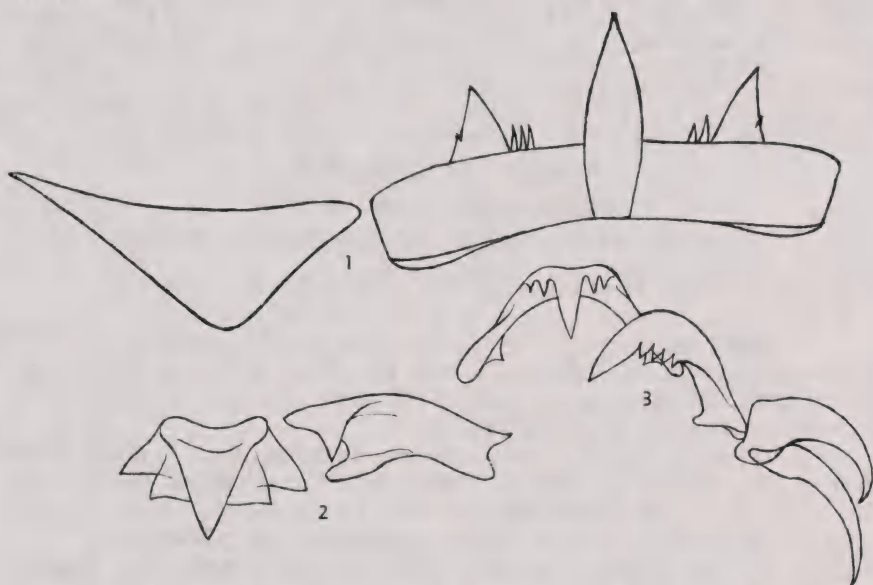
***Polinices tawhitirahia* Powell, 1965.**

1965—*Polinices tawhitirahia* Powell, Rec. Auck. Inst. Mus., Vol. 6,
No. 2, p. 163.

Type locality—Off the northern tip of Tawhiti Rahi, Poor Knights Islands, at about 120 feet in sand and rubble (empty shells only).

Since this species was described, Mr W. Palmer of Whangarei has taken several living specimens at the type locality. The operculum is horny, dark, almost black, and the radula (text fig. 2) differs from that of most naticoids in having the central tooth with a single massive broadly triangulate cusp, without denticles, not tricuspid, the usual form of the naticoid central tooth; the laterals also are simple, with a large triangulate central, but no subsidiary cusps or denticles; the paired marginals, however, are long and slender as in other naticoids.

The radula of *Tanea zelandica* (Q. & G.) is somewhat similar in having a unicuspid central but the cusp is much more slender and has a deep saddle above. However, *Tanea* belongs to the typical shelly operculate group of naticoids.



RADULAE: Fig. 1 *Morula (Oppomorus) palmeri* n. sp. Fig. 2 *Polinices tawhitirahia* Powell, 1965. Fig. 3 *Annaperenna verrucosa* (Sowerby, 1825). All Poor Knights Islands.

Family CASSIDIDAE

Genus **CASMARIA** H. & A. Adams, 1853.

Type: (s.d., Harris, 1897) *Buccinum vibex* Linnaeus, 1758.

Casmaria perryi (Iredale, 1912). Plate 36, Figs. 9, 10.

1910—*Cassidea cernica* (Sowerby), Iredale, Proc. Malac. Soc., 9, p. 71 (non Sowerby, 1888).

1912—*Cassidea perryi* Iredale, Proc. Malac. Soc., 10, p. 227, Pl. 9, fig. 17.

1915—*Cassidea perryi* Iredale, Oliver, Trans. N.Z. Inst., 47, p. 529.

1962—*Casmaria perryi* Iredale, Iredale & McMichael, Austr. Mus. Handb. Mem. no. 11, p. 56.

Type localities—The type locality of *perryi* is Sunday Island (Raoul Island), Kermadec Islands, and that of *cernica* is Mauritius.

Iredale (1910) first recorded the Kermadec shells as *cernica*, then later (1912) described these shells as a new species, *perryi*, stating that they showed "a deceptive resemblance to *cernica* Sowerby, but that species is a smooth relation of *C. vibex*, to which this form is not closely allied."

The species *perryi* is fawn to pale orange-brown, with five spiral bands of maculations on the body-whorl, four of which terminate as darker labial patches; the fifth band consists of more distant subsutural rectangular patches. In the smooth form of *vibex* the labial maculations range between 7 and 9, and the ground colour is ivory to greyish-white.

I now record *perryi* from New Zealand on the basis of one fresh adult specimen and a juvenile taken from rocks just below low water at Oruawharu, south east coast of the Great Barrier Island, by Mrs G. Mitchener, who has the material in her collection at the Great Barrier Island. Another interesting record for the species is Tuncurry, New South Wales (Iredale & McMichael, 1962, l.c.).

Height	width	
43.00 mm.;	24.00 mm.	Kermadec Islands (Holotype of <i>perryi</i>)
37.00 mm.;	21.50 mm.	Kermadec Islands.
35.00 mm.;	20.75 mm.	Kermadec Islands.
30.75 mm.;	17.00 mm.	New Zealand, Gt. Barrier Id.
29.00 mm.;	16.00 mm.	Kermadec Islands.

Genus XENOPHALIUM Iredale, 1927.

Type: (o.d.) *Xenophalium hedleyi* Iredale, 1927.

Xenophalium royanum (Iredale, 1914)

- 1914 *Cassidea royana* Iredale, Proc. Malac. Soc. 11, 3, p. 180, text fig.
 1927 *Xenophalium royanum* (Iredale), Iredale, Rec. Austr. Mus. 15, 5, p. 333.
 1928 *Xenophalium royanum* (Iredale), Powell, Trans. N.Z. Inst. 59, p. 641, pl. 74, figs. 11, 12.

This species is based upon a large weathered specimen cast ashore on the north coast of Raoul Island, Kermadec Islands. Another specimen from the same locality and in a similar condition was collected by Mr T. F. Cheeseman in 1887, and is in the Auckland Museum.

In 1928 I recorded (l.c.) the species from New Zealand with a series of specimens in a good state of preservation, not actually live taken, but inhabited by hermit crabs, from crayfish-pots, in about 20 fathoms off Cavalli Islands and near Stephenson Island off Whangaroa.

Since then several large dead but fresh specimens have been taken at the Poor Knights Islands by the Whangarei group of skin divers, and recently a large living example was obtained at 150 feet on a ledge of bryozoan sand off the N.W. end of Tawhiti Rahi, Poor Knights Islands.

Height	width	
151.0 mm.;	84.5 mm.	Poor Knights Islands (living).
135.0+ mm.	95.0 mm.	holotype.
135.0 mm.;	82.0 mm.	off Cavalli Islands.
126.0 mm.;	78 mm.	Stephenson Island, 17 fathoms.

Family CYMATIIDAE

Genus *Charonia* Gistel and Bromme, 1847.

Type: (monotypy) *Murex tritonis* Linnaeus, 1758.

Charonia tritonis (Linnaeus, 1758)

- 1758 *Murex tritonis* Linnaeus, Syst. Nat. ed. 10, p. 754.
 1913 *Septa tritonis* (Linnaeus), Suter, Manual N.Z. Mollusca, p. 304.
 1964 *Charonia tritonis* (Linnaeus), Powell, Rec. Auck. Inst. Mus. 6, 1, p. 14.

At the above reference (1964) I recorded this large well known tropical Pacific shell from Wainui Bay, Bay of Islands County, Northland, on the basis of a near adult specimen, in a fairly fresh condition.

I can now record the finding of a fully adult example, also in fairly fresh condition, found washed up among rocks at an isolated spot near Rosalie Bay at the southern end of Great Barrier Island, by Mr K. B. Speer. However it is still inconclusive whether the species actually lives in New Zealand waters since the latter locality is adjacent to an overseas shipping lane.

Genus **PROXICHARONIA** Powell, 1938.

Type: (o.d.) *Charonia* (*Charoniella*) *arthritica* Powell & Bartrum, 1929.

This is still another example of an otherwise New Zealand Miocene genus that has survived to Recent times in northern New Zealand waters. Its Miocene relatives are *arthritica* (Powell & Bartrum, 1929) (Otaian), *clifdenensis* (Finlay, 1924) (Altonian) and *neozelanica* (Marshall & Murdoch, 1923) (Awamoan).

From these Tertiary species the Recent one, described below, differs in the form of the peripheral nodules, which are less prominent, more rounded, and more numerous between varices. Another genus closely resembling *Proxicharonia* is the Tasmanian *Negyriina* but it has more rounded whorls and a more capacious body-whorl and aperture.

Owing to a shell injury and its natural repair, forward of the second to last varix, the outline of the holotype of the New Zealand species is narrower and less humped than is shown in a normal but badly damaged and eroded paratype.

Mr Alan Beu, who is writing a revision of the New Zealand and Australian Tertiary Cymatiidae confirms the above generic placing of the New Zealand Recent shell.

Proxicharonia palmeri n. sp. Plate 36, Figs. 11, 12.

Shell of moderate size, 40-43 mm., solid, biconically narrowly ovate, with a slight asymmetrical distortion of the body-whorl, being humped on the left of the body-whorl closely following the second to last labial varix. Varices prominent, broadly rounded, at about two-thirds of a whorl spacing. Spire and aperture plus short recurved, broadly notched anterior canal, about equal in height. Protoconch eroded away. Post-nuclear whorls, besides the varices, sculptured with a low-set peripheral row of moderately large bluntly rounded nodes, 5-6 between varices. Surface sculpture of numerous closely spaced spiral cords, all weakly nodulose, but several on the shoulder slope bearing wider spaced and slightly stronger nodes. Sub-suturally the nodes coalesce vertically to form a puckered margining of about one third the shoulder slope area in depth. In addition the entire surface is densely and finely lirate. Aperture narrowly ovate, rather heavily variced, its outer edge thin, but thickened and dentate within. Inner lip a broad clearly defined callus, bearing a strong entering parietal fold, and about 17 rather weak plicae over the rest of the callus, those toward the anterior canal somewhat stronger. Colour golden brown, aperture and inner-lip callus white; the whole surface normally covered by a yellowish-brown periostracum, which reproduces and emphasises the surface sculpture.

The holotype was inhabited by a hermit crab and this has caused surface wear to the ventral surface making the peripheral nodes appear larger, blunt and smooth.

Locality—One mile off the northern end of the Poor Knights Islands (Northern Reef) at a depth of 140 feet (Mr W. Palmer).

Height 43+ mm.; width 20.0 mm. holotype.

Height 39+ mm.; width 19.5 mm. paratype.

Holotype—Presented to the Auckland Museum by the finder Mr W. Palmer of Whangarei. Paratype in Mr Palmer's collection.

Family BURSIDAE

Genus *Tutufa* Jousseaume, 1881.

Type: (o.d.) *Murex lampas* Linnaeus, 1758.

Tutufa bufo (Röding, 1798). Plate 36, Fig. 8.

1798 *Tritonium bufo* Röding, Mus. Bolt. 2, p. 128 (based upon Martini, 1780, Conch. Cab. 4, pl. 129, fig. 1238).

1842 *Triton lampas* Lamarck (non Linnaeus, 1758), Kiener, Coq. Viv. Triton, p. 38, pl. 5, fig. 1.

1906 *Tutufa* (*Crossata*) *californica* (Hinds); Suter, Trans. N.Z. Inst. 38, p. 328 (non Hinds, 1844).

1914 *Bursa* (*Tutufa*) *rubeta lissostoma* Smith, Journ. of Conch. 24, p. 230, pl. 4, fig. 3.

1915 *Bursa siphonata* (Reeve); Oliver, Trans. N.Z. Inst. 47, p. 528 (non Reeve, 1845).

1931 *Tutufa lissostoma* (Smith, 1914), Iredale, Rec. Austr. Mus. 18 (4), p. 214, pl. 23, fig. 5.

1960 *Bursa* (*Tutufa*) *bufo* (Röding); Kira, Col. Illustra. Shells Japan, pl. 21, fig. 20 (flared red-lipped form).

1962 *Tutufa bufo* (Röding); Iredale & McMichael, Mem. 11, Austr. Mus., Sydney, p. 55.

1963 *Tutufa bufo* (Röding), Oyama & Takemura, The Moll. Shells, 6, *Tutufa*, pl. 2, figs. 2-4.

Locality—Poor Knights Islands, off the north-west end of Tawhiti Rahi Island at about 150 feet. One living female specimen and another (not seen) obtained by the Whangarei group of skin divers.

The identity of this exotic species is very involved from a nomenclatorial standpoint, but basically it is dependant upon the interpretation of Chemnitz's figure in Martini (Conch. Cab. 4, pl. 129, fig. 1238). Chemnitz's figure could almost equally well apply to a young example of *lampas* (Linnaeus, 1758).

The shell I now record for New Zealand is the Indo-Pacific red-mouthed *Tutufa* with the considerably expanded outer lip, especially basally, and with only a weak development of labial tubercles.

I have red-mouthed, splayed lip shells identical with the New Zealand shell from the following localities — Raoul Island, Kermadec Islands, 75-85 metres (Galathea Exped. 3-3-1952); Denham Bay, Raoul Island (coll. T. F. Cheeseman, 1887; the specimen identified as *californica* by Suter, 1906, and *siphonata* by Oliver, 1915); Bougainville, Solomon Islands (AM18221). These are identical with the Japanese shells figured by Kira (l.c.) and Oyama & Takemura (l.c.) as *bufo*, and the Indian Ocean shell described and figured by Smith as *rubeta lissostoma* (l.c.). Iredale (1931, Rec. Austr. Mus. 18, p. 214, pl. 23, fig. 5) accepted *lissostoma* as the valid name for the red-mouthed *Tutufa* from Sydney Harbour, but later (Iredale & McMichael, 1962, l.c.) relegated Smith's name to the synonymy of *bufo*.

Since the majority view seems to be in favour of *bufo* as the correct name for the red-mouthed *Tutufa*, there the matter rests for the present, but if it should be proved that *bufo* (Röding, 1798) is the same as *lampas* (Linnaeus, 1758) then Smith's *lissostoma* will be the name to be used for the red-mouthed shells.

Height 170.0 mm.; width 111.0 mm. Bougainville.
 Height 140.5 mm.; width 87.0 mm. N.Z., Poor Knights Is.
 Height 108.0 mm.; width 78.0 mm. Kermadecs, Denham Bay.
 Height 103.0 mm.; width 65.0 mm. Kermadecs, 75-85 metres.

Genus *Annaperenna* Iredale, 1936.

Type: (o.d.) *Ranella verrucosa* Sowerby, 1825 = *Murex papilla* Wood, 1828.

Annaperenna verrucosa (Sowerby, 1825).

1825 *Ranella verrucosa* Sowerby, Cat. Coll. Tankerville, Append. p. 18.
 1965 *Annaperenna verrucosa* (Sowerby), Powell, Rec. Auck. Inst. Mus. 6, 2,
 p. 162, pl. 22, figs. 5, 6.

Type locality—Probably Norfolk Island (Iredale, 1936, Rec. Austr. Mus. 19, p. 310). Also known from Lord Howe Island, Kermadec Islands, Sydney Harbour (dredge spoil) and Poor Knights Islands, northern New Zealand at 50 and 150 feet.

Mr Byron Anderson, one of the Whangarei group of skin divers responsible for the above Poor Knights Islands records, has extended the range of the species to the eastern Bay of Plenty by the finding of a giant sized example, 57 mm. x 33 mm., taken at 150 feet off Club Rocks, S.W. of White Island (April, 1966).

The operculum is irregularly ovate with a subterminal nucleus. The radula (text fig. 3) is very like that of *Bursa crumena* (Lamarck) as figured by Thiele (1929, Handb. Syst. Weicht. 1, p. 284, fig. 304). It consists of a saddle-shaped central with a long central cusp and a pair of smaller cusps on each side; lateral massive, strongly arched, bearing four cusps about midway along its outer edge; and a pair of sickle-shaped marginals, the inner one massive, the outer one slender.

Family TONNIDAE

Genus *TONNA* Brunnich, 1772.

Type: (monotypy) *Buccinum galea* Linnaeus, 1758.

Tonna melanostoma (Jay, 1839). Plate 36, Figs. 6, 7.

- 1839—*Dolium melanostoma* Jay, Catal. of Shells, 3rd. Edit., p. 125, Pl. 8, 9.
 1848—*Dolium melanostoma* Jay, Reeve, Conch. Iconica, 5, Pl. 2, fig. 2.
 1885—*Dolium melanostoma* Jay, Tryon, Man. of Conch., 7, p. 261, Pl. 1,
 fig. 4.
 1943—*Tonna melanostoma* (Jay), Osima, Conch. Asiatica, 1, p. 118, Pl. 2,
 fig. 2.
 1961—*Tonna melanostoma* (Jay), Habe, Col. Illust. Shells of Japan, 2, Pl. 24,
 fig. 8.
 1964—*Tonna melanostoma* (Jay), Habe, Shells of the Western Pacific, in
 colour, 2, p. 77, Pl. 24, fig. 8.

Type locality—"Friendly Islands" = Tonga. Widely distributed in the tropical Pacific, and occasionally taken at the Ryukyu Islands on fine sandy bottom in from 5 to 20 metres (Habe, 1964).

This species can now be added to the New Zealand fauna on the basis of one live taken specimen, from off the Cavalli Islands, in the possession of Mr Bruce Sanderson of Whangaroa, another trawled off Doubtless Bay, in the collection of Mrs J. Atkinson of Mangonui, and a third record, a beach shell found at Spirits Bay, in the collection of Mrs M. J. Hancock of Whangarei.

This shell is easily recognised by its rich dark-brown spreading parietal callus, and deeply incised twin grooves in each of the spiral interspaces. The interior of the aperture is golden-brown with the inner edge of the outer lip tinged with dark-brown. The exterior of the shell is fawn, the spaces between the broad spiral ridges are picked out in brown, and there are distant obscure spiral bands as well.

The Cavalli Island shell is a small one — height 86.0 mm., width 68.0 mm.; Reeve's figure (l.c.), presumably natural size, shows a shell with a height of 190 mm. (= 7½ inches), and Tryon (l.c.) gives the adult height as 9 inches.

Tonna olearium (Linnaeus, 1758).

1758 *Buccinum olearium* Linnaeus, Syst. Nat. ed. 10, p. 734.

1927 *Tonna tetracotula* (not of Hedley, 1919), Powell, Trans. N.Z., Inst., Vol. 57, p. 559, Pl. 32.

1956 *Buccinum olearium* Linnaeus, Dodge, A Hist. Rev. Moll. Linn., Pt. 4, Bull. Amer. Mus. Nat. Hist., Vol. 3 (4), pp. 160-164.

1956 *Tonna olearium* (Linnaeus), Kaicher, Indo-Pac. Sea Shells, Tonnacea, Pl. 5, fig. 7.

1962 *Tonna olearium* (Linnaeus), Kira, Coloured Illust. Shells of Japan, Pl. 22, fig. 10.

It is now revealed that there are two species of large *Tonna* occurring in northern New Zealand waters that exhibit intercostal subsidiary spiral threads.

In the past both of these species have been assigned to the S.E. Australian *tetracotula* Hedley, 1919. However a series of six specimens in the collection of Mrs J. Atkinson of Mangonui, trawled in Doubtless Bay, are thin shelled, without a thickened internal ridge to the outer lip, and of simple coloration, uniform chestnut-brown but fading to white in a broad subsutural band.

In true *tetracotula* the outer lip has an internal ridge and the coloration is pale buff with two or three broad spiral bands of reddish-brown.

When I first recorded "*tetracotula*" from New Zealand (Powell, 1927, l.c.) the specimen cited and figured proves to be the uniformly coloured, thin-lipped *Tonna*, which seems to be the Linnaean *olearium*, a species that has been the subject of considerable controversy. On the other hand many New Zealand examples of the true *tetracotula* have since been obtained from trawlers operating in Northland east coast waters and in the Bay of Plenty.

Regarding the true identity of Linnaeus' *olearium* the name has long been misapplied to another Indo-Pacific species that does not have intercostal spirals, i.e., the *olearium* of Bruguière, 1789 (Ency. Meth., p. 243). Dodge (1956, l.c.) points out that Linnaeus' brief original description of *olearium*, "B. testa subrotunda cincta sulcis obtusis: lineola elevata interstinctis, apertura edentula" definitely applies to a species with intercostal spirals, which precludes the interpretations of Bruguière and those of many other authors, i.e., Reeve, 1849, and Tryon, 1885.

After a lengthy and informative discussion Dodge (1956, l.c., p.p. 160-165) gave a convincing case for the identity of the true *olearium*, as here interpreted, and at the same place provided a new name, *planicostata*, for the shell of Bruguière and others.

The type locality for *olearium* is "O. Indico", it is recorded from Japan in 20 fathoms by Kira (1962, l.c.), and the New Zealand records are:

trawled near the entrance to the Hauraki Gulf or western Bay of Plenty (Powell, 1927, l.c.) and trawled, Doubtless Bay (Mrs J. Atkinson).

Height 200 mm.; diameter 157 mm.; weight 5 ounces (shell) (Powell, 1927). The Mangonui specimens are all smaller than the above.

The species of *Tonna* known to occur in New Zealand waters are now as follows:— *cerevisina haurakiensis* Hedley, 1919; *maculata* (Lamarck, 1822) (= *dolium* of Powell 1952; non Linnaeus, 1758); *maoria* Powell, 1938; *melanostoma* (Jay, 1839); *olearium* (Linnaeus, 1758) and *tetracotula* Hedley, 1919.

An additional record for New Zealand occurrences of *maculata* is three live taken or fresh specimens in the collection of Mrs J. Atkinson of Mangonui, which were trawled off Doubtless Bay.

Family MURICIDAE

Genus *Pteropurpura* Jousseau, 1880.

Type: (monotypy) *Murex macropterus* Deshayes, 1839.

(See Emerson, 1964, Veliger, 6, 3, p. 151, pl. 19, fig. 2)

Pteropurpura cf. *plorator* (Adams & Reeve, 1850).

Plate 37, Figs. 1-4.

1850 *Murex plorator* Adams & Reeve, Zool., Voy. H.M.S. Samarang, p. 38, pl. 8, fig. 3a, b.

A young specimen attributed to this three-winged species, the type of which came from Korea, was trawled in Northland, New Zealand, probably in the North Cape-Three Kings area.

The Korean type is dark chestnut with a narrow supra-peripheral pale band, but in other material (off Tosa, Japan) the coloration is more or less uniformly pale yellowish brown with three indistinct narrow bands of slightly darker dashes. The most characteristic feature of the species is a single peripheral blunt rounded boss between each pair of winged varices.

The New Zealand shell is immature, which makes exact comparison uncertain, but this specimen does have the single boss between varices and similar coloration to that of Japanese shells; the anterior canal is open for its entire length, not partially closed as in adult Japanese shells, but this is to be expected in a juvenile.

Height 48.0 mm.; width 22.5 mm. type of *plorator*.

Height 32.0 mm.; width 19.0 mm. type of *modesta*.

Height 21.5 mm.; width 13.0 mm. (distances between varices, 13 mm, 12 mm. and 14.5 mm.), New Zealand immature shell.

The Japanese *Ocinebra* (*Ocinebrellus*) *modesta* Fulton, 1936 (Proc. Malac. Soc. 22, p. 10, pl. 2, fig. 3) appears to have several small nodes between the varices, but is otherwise very similar to *plorator*. The genus *Ocinebrellus* Jousseau, 1880, type (o.d.) *Murex eurypteron* Reeve, 1845 (Japan) is a larger and heavier shell, with more numerous varices that do not line up from whorl to whorl.

The New Zealand shell is in the collection of Mrs N. Gardner, Auckland.

This record not only adds a genus to the New Zealand fauna but also considerably extends its range, which previously, was Korea and Japan to California.

Family THAISIDAE

Genus *Morula* Schumacher, 1817.Subgenus *Oppomorus* Iredale, 1937.Type: (o.d.) *Purpura noduliferus* Menke, 1829 (= *Purpura chaidea* Duclos, 1832).***Morula (Oppomorus) palmeri* n. sp. Plate 37, Figs. 10-13.**

Shell ovate-cylindrical, solid, dull white externally, porcellanous-white within the aperture and over the spreading inner lip. Spire less than height of aperture, which is narrowly rectangular, with a thin-edged outer lip, unarmed except for weak internal lirations. Protoconch rather broadly conical of 4 to 4½ whorls, apparently smooth, except for a suprasutural weakly beaded thread, and ending abruptly with a thin reflected vertical rim-like axial. Adult sculpture of numerous strong rounded axial folds crossed by spiral cords which develop strong laterally elongated nodes on the axial folds but are obsolete over the intercostal spaces. The number and relative strengths of the spiral cords is subject to considerable variation. The basic arrangement for the early spire whorls is a broad subsutural fold, followed by a sulcus, then two closely spaced cords over the lower half of the whorls; and these increase to 3 or 4 by the end of the penultimate; the cords on the body-whorl are usually 9, sometimes 10, and occasionally only 6 or 7. A weak thread is sometimes present in the shoulder sulcus.

Height 20.75 mm.; width 11.0 mm. holotype.

Height 21.5 mm.; width 11.0 mm. paratype.

Localities—Poor Knights Islands, north-west end of Tawhiti Rahi Island, on boulders in floor of large cave at 60-80 feet depth (holotype) (W. Palmer); Werahi, near Cape Maria van Diemen (1 dead shell) (N. Gardner, 1965). The cave at Piercy Island, Cape Brett at 45 feet (W. Palmer).

The species resembles *nodulifera* (Menke, 1829) (= *chaidea* Duclos, 1832) but lacks the two weak denticles at the base of the pillar. Also in *nodulifera* the spiral cords are continuously undulated over axials and interspaces alike, the spiral interspaces are linear, bridged by dense lamellate axial threads, and the aperture is proportionately smaller.

The radula in *palmeri* consists of a wide but shallow-based tricuspid central tooth, the central cusp being much the strongest; at the base of the side cusps there are 2 or 3 denticles on the inner face and 1 on the outer face; and the lateral is shaped somewhat like an isosceles triangle.

The radula (text fig. 1) most closely resembling that of the New Zealand species is that of the Indo-Pacific *Morula cavernosa* (Reeve, 1846), as figured by Arakawa (1965, Venus, 24, 2, pl. 14, figs. 13, 14). The main difference is in the lateral which is more L-shaped in *cavernosa*. Arakawa used *Morulina* Dall, 1923 for this species, but its type species, *mutica* (Lamarck), is very solid, of squat ovate shape, is prominently dentate within the outer lip, and has a well developed parietal callus pad.

Holotype and paratypes presented to the Auckland Museum by Mr W. Palmer of Whangarei.

Family MAGILIDAE

Genus *Liniaxis* Laseron, 1955.Type: (o.d.) *L. elongata* Laseron, 1955.***Liniaxis sertata* (Hedley, 1903). Plate 37, Figs. 5, 6.**1903 *Purpura sertata* Hedley, Mem. Aust. Mus. 4 (6), p. 382, t. figs. 95, 96.

1955 *Liniaxis sertata* (Hedley). Laseron, The Mar. Zool., Sydney 1 (3), p. 73, pl. 1, figs. 7, 8.
Type locality—New South Wales, off Port Kembla, 63-75 fathoms.

This species can now be added to the New Zealand fauna on the basis of the following records:-

North West Reef, between Little Barrier Island and Taranga (Hen Island), 30 fathoms, 3 living specimens on an antipatharian coral (sea-tree), Mr C. Wormald: Kopu Wairoa, Spirits Bay, in shell-grit on island, Mr M. Douglas, May, 1966 (1 worn shell).

The correct name for this new addition is fixed tentatively as *sertata* (Hedley, 1903), for according to Laseron (1955, l.c. p. 70), confusion resulted from the fact that the assumed adult of Hedley's species, the "*sertata*" of Iredale, 1929 (Rec. Aust. Mus. 17,4, pl. 41, figs. 3,8), there cited as type of a new genus, *Tolema*, was an undescribed species, for which Laseron provided the new name *australis*.

The true adult of Hedley's species, according to Laseron, is another genus, close to *Coralliophila*, and which he named *Liniaxis*, with a new species, *elongata* as type. Since Iredale figured his own interpretation of Hedley's *sertata* in citing the type species for *Tolema* it is reasonable to accept Laseron's contention that the type should be interpreted upon the basis of Iredale's figure rather than upon Hedley's name.

Laseron (1955, l.c. pp. 72-74) listed three species under his *Liniaxis*: *elongata* n.sp. (type), *sertata* (Hedley, 1903) and *nodosa* (Adams, 1853). Upon the basis of photographs submitted, Dr. D. F. McMichael of the Australian Museum, Sydney, considered that the New Zealand shells were identical with the true *sertata* of Hedley.

Another point was raised by Mr W. F. Ponder of the Dominion Museum, Wellington, who noted the similarity to *Liniaxis* of *Murexsul tepikiensis* Powell, 1934 (Rec. Auck. Inst. Mus. 1, 5, p. 272) from Cape Runaway (Castlecliffian; upper Pleistocene). Undoubtedly *tepikiensis* must be transferred to *Liniaxis*, but specifically, the Cape Runaway fossils are distinguishable from *sertata* by the more rounded non-carinated whorls.

The New Zealand shells are pinkish-white, sculptured with numerous linear-spaced keels that bear closely packed imbricated scales in a cone-in-cone manner. This sculpture overrides rather distant weak to moderately strong axials, strongest at a peripheral subangle. A feature of the shell is the strongly imbricated anterior fasciole. Interior of the aperture rose-pink.

Height 22.0 mm.; width 12.5 mm. New Zealand, N.W. Reef.
 Height 19.0 mm.; width 10.5 mm. New Zealand, N.W. Reef.
 Height 18.0 mm.; width 10.0 mm. New Zealand, N.W. Reef.

Family FASCIOLARIIDAE

Subfamily FUSININAE

Genus *FUSINUS* Rafinesque, 1815.

Type: (monotypy) *Murex colus* Linnaeus, 1758.

***Fusinus genticus* (Iredale, 1936). Plate 36, Figs. 4, 5.**

1936 *Colus genticus* Iredale, Rec. Austr. Mus., 19, p. 316, Pl. 23, fig. 5.

1962 *Fusinus genticus* (Iredale), Iredale & McMichael, Mem. 11, Austr. Mus., Sydney, p. 69.

This species, and with it a genus, can now be added to the New Zealand Recent fauna on the basis of several specimens, in a fresh state, inhabited by hermit crabs, taken in crayfish-pots, in the vicinity of Doubtless

Bay, the Cavalli Islands and the Great Barrier Island. One of these specimens, that figured, is from the Cavalli Islands, and was presented to the Auckland Museum by Mr S. E. Turner. The Great Barrier Island example, referred to below, is in the collection of Mr Turner.

Shell large, 110-150 mm., of rather light build, rather broadly fusiform for the genus, with a tall spire and a long straight anterior canal. Protoconch missing; adult whorls sharply carinated below middle whorl height, the carina bearing sharply pointed nodes, 14 on the last whorl, and the whole surface crossed by closely spaced spirals of uneven development. On the spire-whorls, from the peripheral carina to the lower suture, 3-4 of the spirals assume primary strength and there is a fairly regular development of primaries over the rest of the shell. Aperture ovate, quickly contracted to a long straight and narrow anterior canal. Inner lip a smooth light callus with a slightly raised free edge; no parietal processes and only an obscure slightly thickened columellar ridge at the base of the aperture proper. Outer lip thin and slightly dilated; weakly spirally lirate within. Colour dull white; but in the Great Barrier Island specimen there is a faint colour pattern also in the form of pale yellowish-brown zones, one occupying the whole of the shoulder slope and another partly emergent at the lower suture. Slightly darker yellowish-brown maculations alternate with the peripheral nodes. Also there are traces of a thick brownish-olive pile-like periostracum.

Height, 111.0 mm.; width 39.0 mm. Holotype; Sydney Harbour dredgings.

Height, 148.5 mm.; width 56.0 mm. Off Cavalli Islands, in crayfish-pots.

Height, 160.0 mm.; width 59.0 mm. N.E. of Great Barrier Island, 30 fathoms.

This shell is deceptively like a *Penion* but can at once be distinguished by its long straight canal.

Type locality—New South Wales, Sydney Harbour dredging dump.

Family APLYSIIDAE

Genus *Dolabrifera* Gray, 1847.

Type: (o.d.) *Dolabella dolabrifera* Cuvier, 1817.

Dolabrifera brazieri (Sowerby, 1870).

1870 *Dolabrifera brazieri* Sowerby, Proc. Zool. Soc., p. 250.

1896 *Dolabrifera jacksoniensis* Pilsbry, Man. Conch., 16, p. 120, Pl. 44, figs. 38-41.

1917 *Dolabrifera brazieri*; Hedley, Proc. Linn. Soc. N.S.W., 41 (4), p. 717, Pl. 49, fig. 25.

1950 *Dolabrifera brazieri*; Allan, Aust. Shells, p. 216, figs. 2, 5.

1962 *Dolabrifera brazieri*; Iredale & McMichael, Ref. List. Mar. Moll. N.S.W., Aust. Mus. Mem., 11, p. 91.

The finding of three living specimens of this species at Taiharuru, near Pataua, Whangarei Heads, adds a genus and species to the New Zealand fauna. The finder, Mrs Ida Worthy of Whangarei, states that these molluscs were crawling upon silty gravel bottom at low tide in gutters amongst the rocks at the mouth of a tidal stream.

The animal is between 3 and 4 inches in length and 1½ to 2 inches in breadth; gradually tapered toward the anterior end. According to Hedley (1917, l.c.) "the colour is olive-brown, variegated with buff, and tinged at the margin and on the tentacles and rhinophores, with green. Upon the back are about a score of warty protruberences, which rise or subside at the will of the animal, and from the summit of which a white filament may project for two or three millimetres, or be withdrawn.

"The tentacles are comparatively short and broad, bell-shaped, split nearly to the base, with ragged margin. The rhinophores are narrow, more cylindrical, less deeply notched, set farther back on the neck. Just in front of these are the sessile, inconspicuous black eyes.

"The posterior orifice is set far back, is ovate, about 6 mm. long, with erect margins and an inner lobe rising at the anterior end. In front of this, the right side of the mantle overlaps the left. The gill is never exerted."

The type locality of the species is Botany Bay, New South Wales.

One of the Pataua specimens measures (in a spirit contacted condition) 68 mm. in length, 42 mm. in greatest breadth and about 18 mm. in thickness. The characteristic hatchet-shaped internal shell is 16.5 mm. in height and 7 mm. in maximum breadth.

Family SEMELIDAE

Genus SEMELE Schumacher, 1817.

Type: (monotypy) *Tellina reticulata* "Spengler" Schumacher, 1817

= *Tellina proficua* Pulteney, 1799.

This genus is now added to the New Zealand fauna on the basis of a species assumed to be new, represented at present by but a single specimen, but it is anticipated that others will be found, since it has probably been overlooked owing to its strong superficial resemblance to the tellinid *Zearcopagia disculus* (Deshayes, 1855).

The New Zealand species seems to be nearest allied to the Indian Ocean *Amphidesma crenulatum* G. B. Sowerby, 1841 (Conch. Illustr. Catal., p. 8), a shell I have not seen, but from illustrations, including that of Reeve, 1853 (Conch. Iconica 8, pl. 2, fig. 8), the New Zealand shell appears to be much finer sculptured.

Semele brambleyae n. sp. Plate 37, Figs. 7-9.

Shell orbicular, equilateral, of moderate inflation, solid, with a distinct posterior fixture, and a large elongated resilifer and pit, lying obliquely in the middle of the hinge plate. Sculpture dense and elaborate, consisting for the most part of very closely spaced, distinctly crenulated, lamellate, concentric lamellae, with dense connecting radial threads, enclosing vertical narrowly ovate pits. The prodissoconch is very small, smooth, and sharply pointed, but between it and the commencement of the adult sculpture there is a phase, occupying 4 mm., of much wider-spaced and smooth lamellae, with finely radially lirate interspaces but no pits. The concentric lamellae number about 25 per centimeter over the middle area of the shell. Hinge normal for the genus; cardinals narrow and weak, laterals strong. Valve margins smooth to microscopically densely crenulated. Pallial sinus large and deep, with a broadly rounded apex, and ascending to the middle of the shell. Colour yellowish-buff, without markings, and with a thin light brownish periostracum. Interior of valves shining, ivory, tinged with chrome.

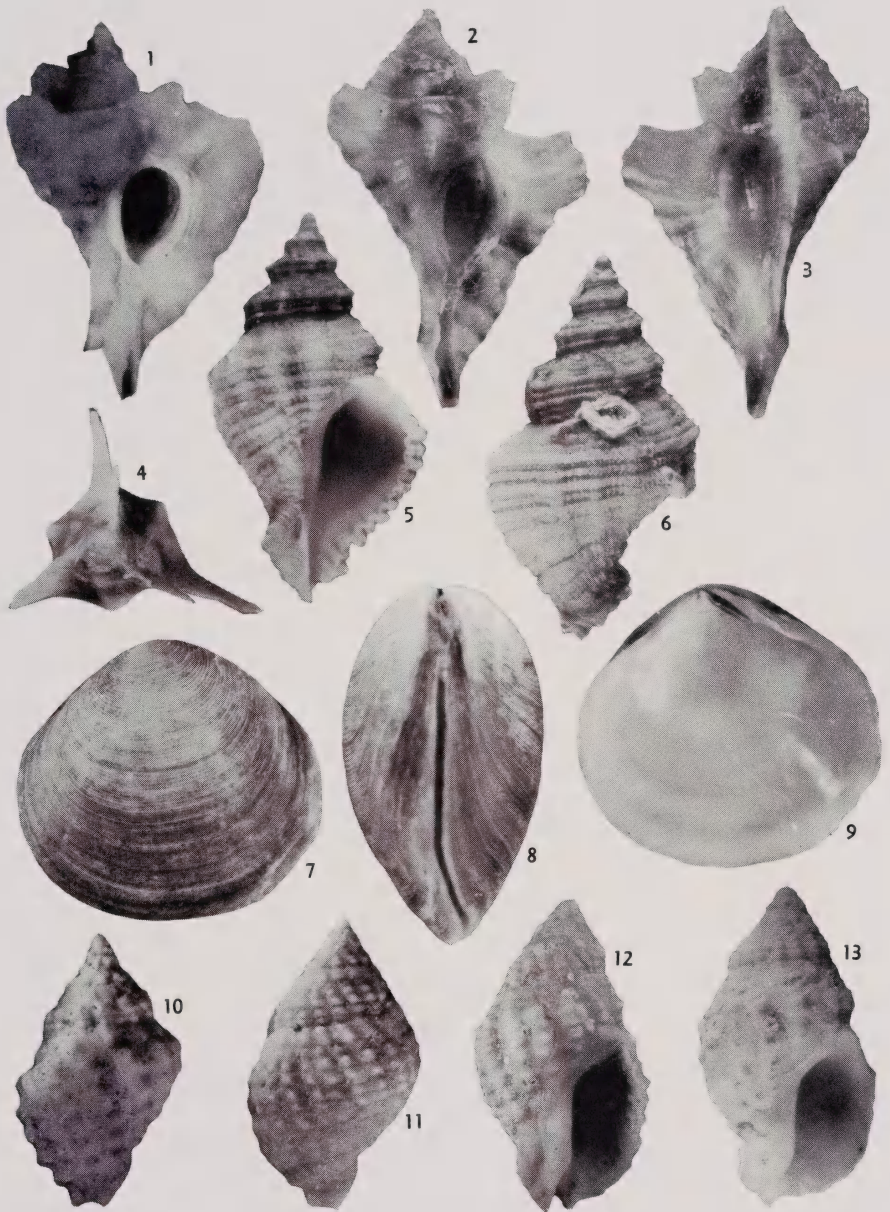
Length 32.5 mm.; height 31.0 mm.; inflation (both valves) 18.0 mm.

Locality—East end of Orua Bay, Manukau Harbour (on mud flat, one empty shell, in a fresh state, with joined valves).

Holotype—Presented to the Auckland Museum by the finder, Miss Dianne Brambley of Wattle Bay, Manukau Heads.



Figs. 1-3 *Lyncina vitellus* (Linnaeus, 1758) Poor Knights Islands. Figs. 4, 5 *Fusinus geniticus* (Iredale, 1936) Doubtless Bay. Figs. 6, 7 *Tonna melanostoma* (Jay, 1839) Cavalli Islands. Fig. 8 *Tutufa bufo* (Roding, 1798) Poor Knights Islands. Figs. 9, 10 *Casmaria perryi* (Iredale, 1912) Great Barrier Island. Figs. 11, 12 *Proxicharonia palmeri* n. sp. (holotype) Poor Knights Islands.



Figs. 1-4 *Pteropurpura cf. plorata* (Adams & Reeve, 1850) Japan (Fig. 1), North Cape-Three Kings area (Figs. 2-4). Figs. 5, 6 *Liniaxis sertata* (Hedley, 1903) N. W. Reef, nr. Little Barrier Island. Figs. 7-9 *Semele brambleyae* n. sp. (holotype) Orua Bay, Manukau Harbour. Figs. 10-13 (*Oppomorus*) *palmeri* n. sp. Poor Knights Islands (holotype fig. 12).